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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,330	08/31/2006	Hitoshi Ishizaka	Q96338	9420
23373 7590 12/23/2008 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037				
EXAMINER				
BIRBACH, NAOMI L				
ART UNIT		PAPER NUMBER		
4132				
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12/23/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/591,330

**Applicant(s)**

ISHIZAKA ET AL.

**Examiner**

NAOMI BIRBACH

**Art Unit**

4132

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08/31/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date 08/21/2006
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## DETAILED ACTION

### *Specification*

1. The abstract of the disclosure is objected to because it refers to purported merits of the invention and because it contains reference numbers. Correction is required.

See MPEP § 608.01(b).

2. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

3. The disclosure is objected to because of the following informalities: The specification lists the claims on pages 8-10, before the effect of the invention section.

The claims do not belong in the specification.

Appropriate correction is required.

4. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

**Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
7. Claims 1, 2, 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-300449 to Namikawa et al. in view of JP 05-121307 to Casio Computer Co, Ltd (herein Casio) and JP 2003-021897 to Nitto Denko Corp (herein Nitto). (See provided machine translations of Namikawa, Casio and Nitto.)
8. As to claims 1 and 2, Namikawa discloses a cleaning member for a substrate processing unit (semiconductor apparatus) which comprises a wafer with a cleaning layer made of heat-resistant resin formed on at least one side (Page 2, Paragraph [0004], Page 5, Paragraph [0012]).
9. Namikawa does not expressly disclose that the cleaning layer has a part wherein a wafer surface is exposed or that the cleaning layer was formed by curing a poly(amic acid).

10. Nitto discloses a step in which a varnish comprising a poly(amic acid) solution is obtained and applied to a substrate (Page 7, Paragraph [0027]) and cured (Page 9, paragraph [0040]).

11. The limitation "formed by thermally curing" is a method limitation and does not determine the patentability of the product, unless the process produces unexpected results. The method of forming the product is not germane to the issue of patentability of the product itself, unless Applicant presents evidence from which the Examiner could reasonably conclude that the claimed product differs in kind from those of the prior art (MPEP 2113). Furthermore, there does not appear to be an unobvious difference between the prior art structure and the structure resulting from the claimed method because the combination of Namikawa and Casio disclose the structure of the claimed cleaning member.

12. Casio discloses a wafer with a film coating where part of the wafer surface is exposed (Page 3, Paragraphs [0007] - [0008]; Drawing 2). The area exposed is a part wherein a film has been removed throughout the whole circular area having a given width ranging from the peripheral edge of the wafer toward the center thereof, i.e. the outer circumference (Page 3, paragraph [0008]; Drawing 2).

13. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the cleaning member as taught by Namikawa to include forming the cleaning layer made of heat-resistant resin by curing a poly(amic acid) as taught by Nitto because poly(amic acid) solution is heat resistant, and curing the poly(amic acid) to cause polymerization and hardening of the varnish (Page 9, Paragraph [0040]). One

of ordinary skill would have been motivated to use the poly(amic acid) in order to form a surface protection and insulating layer on the cleaning member (Nitto: Page 2, Paragraph [0003]). Furthermore, the selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination (MPEP 2144.07).

14. It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the cleaning member as taught by Namikawa and Nitto to include a part of the cleaning layer where a wafer surface is exposed, where that part is the outer circumference of the wafer as taught by Casio in order to remove an unnecessary part of the cleaning layer. One of ordinary skill would have been motivated to remove a part of the cleaning layer so that the wafer surface is exposed around the outer edge because a layer applied to a wafer can result in a raised edge, due to the surface tension of the film liquid (Page 2, paragraph [0003]). It would be desirable to remove this area so that the cleaning layer can remain uniformly flat.

15. As to claim 3, Namikawa discloses a method for producing a cleaning member for a semiconductor apparatus including a second step of applying a heat-resistant varnish on a wafer surface (Page 5, Paragraph [0012]). Namikawa also discloses the third step of drying the varnish applied to the wafer (Page 5, Paragraph [0012]).

16. Namikawa discloses that a heat-resistant varnish is obtained, but does not specify that the varnish comprises a poly(amic acid) solution. Namikawa does not expressly disclose a fourth step in which part of the varnish on the wafer is partly removed by dropping a solvent thereunto to thereby form a part wherein a wafer surface

is exposed. As to the fifth step in which the residual coating film is cured at a temperature of 200 degrees Celsius or higher, Namikawa discloses that the wafer is dried at 250 degrees Celsius (page 5, Paragraph [0012]), but does not distinguish curing from drying.

17. Nitto discloses a step in which a varnish comprising a poly(amic acid) solution is obtained and applied to a substrate (Page 7, Paragraph [0027]). Nitto discloses drying the varnish (Page 8, paragraph [0034]), followed by curing the varnish at a temperature of 350-500 degrees Celsius (Page 9, paragraph [0040]).

18. Casio discloses a film removal method comprising dropping a solution onto a film to dissolve the film, resulting in forming a part wherein a wafer surface is exposed (Page 2, Paragraph [0006]; Drawing 2).

19. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method as taught by Namikawa to include a varnish comprising a poly(amic acid) solution which is cured at a temperature above 200 degrees Celsius as taught by Nitto because poly(amic acid) solution is heat resistant and can be used to form a surface protection and insulating layer (Nitto: Page 2, Paragraph [0003]). One of ordinary skill would have been motivated to cure the residual coating film in order to cause polymerization and hardening of the varnish (Page 9, Paragraph [0040]).

20. It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the method as taught by Namikawa and Nitto to include dripping a solvent onto the cleaning layer to form a part wherein a wafer surface is exposed as taught by Casio in order to remove unnecessary film and to prevent a



raised edge from forming on the outer periphery due to the surface tension of the film liquid, which would be inefficient for cleaning (Page 2, Paragraph [0003]). One of ordinary skill would have been motivated to remove the unnecessarily coating before curing, because removal of a polymer coating after curing is significantly more difficult.

21. As to claim 4, Namikawa discloses a method of cleaning a semiconductor apparatus, characterized by conveying a cleaning member for semiconductor apparatus in the semiconductor apparatus to thereby remove foreign matters adherent to inner parts of the semiconductor apparatus (Page 4, Paragraph [0010]). Namikawa teaches that the cleaning member for a substrate processing unit (semiconductor apparatus) which comprises a wafer with a cleaning layer made of heat-resistant resin formed on at least one side (Page 2, Paragraph [0004], Page 5, Paragraph [0012]).

22. It is noted that Namikawa does not expressly disclose that the cleaning layer has a part wherein a wafer surface is exposed. However, Casio discloses these limitations as addressed above with respect to claims 1 and 2.

23. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-300449 to Namikawa in view of JP 2003-021897 to Nitto Denko Corp (herein Nitto) and JP 2002-320902 to Tokyo Electron Ltd (herein Tokyo). (See provided machine translations of Namikawa, Nitto and Tokyo).

24. As to claims 5 and 6, Namikawa discloses a method of producing a cleaning member for a substrate processing unit (semiconductor apparatus) which comprises a wafer with a cleaning layer made of heat-resistant resin formed on at least one side

(Page 2, Paragraph [0004], Page 5, Paragraph [0012]). Namikawa discloses the second step of applying heat-resistant varnish to a wafer by spin coating (Page 2, Paragraph [0004], Page 5, Paragraph [0012]). Namikawa also discloses the third step of drying the varnish applied to the wafer (Page 5, Paragraph [0012]).

25. Namikawa discloses that a heat-resistant varnish is obtained, but does not specify that the varnish comprises a poly(amic acid) solution. As to the step of curing the coating film at a temperature of 200 degrees Celsius or higher after drying, Namikawa teaches that the member is dried at 250 degrees Celsius (Page 5, Paragraph [0012]), but does not expressly teach that this step distinguishable from the drying step. Namikawa discloses that the varnish is applied by spin coating, but does not expressly disclose that this step comprises horizontally and rotatably fixing the wafer to the top of a table, disposing a horizontally movable coating nozzle over the wafer, ejecting the varnish from the nozzle while rotating the wafer and horizontally moving the nozzle to thereby spirally apply the varnish to the wafer so as not to leave a space between the spiral curves, and regulating that area in the wafer surface which is to be thus coated to thereby leave an uncoated part wherein a wafer surface is exposed.

26. Nitto discloses a step in which a varnish comprising a poly(amic acid) solution is obtained (Page 7, Paragraph [0027]). The poly(amic acid) solution used is a precursor of polyimide resin (Page 3, Paragraph [0012]). Nitto discloses drying the varnish (Page 8, paragraph [0034]), followed by curing the varnish at a temperature of 350-500 degrees Celsius (Page 9, paragraph [0040]).

27. Tokyo discloses horizontally and rotatably fixing a wafer to the top of a table (Page 5, Paragraph [0013]; Drawing 1) and ejecting coating liquid from a nozzle to apply the coating liquid spirally on a wafer while moving the nozzle toward the periphery from the central part of the substrate, which is horizontal movement (Page 4, Paragraph [0009]; Page 5, Paragraph [0013]). The coating is applied spirally so as not to leave a space between the spiral curves (Page 7, Paragraph [0019]). Tokyo discloses stopping the movement of the nozzle and rotation of the substrate when coating liquid reaches the rim part of a coated field, thereby leaving an uncoated part where the wafer surface is exposed (Page 4, Paragraph [0009], Page 7, Paragraph [0020]; Drawings 4(a) and (b)). The uncoated part where the wafer surface is exposed is the whole circular area having a given width ranging from the peripheral edge of the wafer toward the center thereof (Page 7, Paragraph [0020]; Drawing 4(b))

28. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method as taught by Namikawa to include a varnish comprising a poly(amic acid) solution which is cured at a temperature above 200 degrees Celsius as taught by Nitto. One of ordinary skill would have been motivated to use a varnish comprising poly(amic acid) solution because it is heat resistant and can be used to form a surface protection layer and insulating layer (Nitto: Page 2, Paragraph [0003]). It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the invention as taught by Namikawa and Nitto to include the spin coating method taught by Tokyo in order to achieve a homogenous cleaning layer (Tokyo: Page 3, Paragraph [0008]).

***Conclusion***

29. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NAOMI BIRBACH whose telephone number is (571)270-7367. The examiner can normally be reached on Monday-Thursday, 8:00am-5:00pm.

30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lavilla can be reached on 571-272-1539. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

31. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. B./  
Naomi Birbach  
Examiner, Art Unit 4132  
12/10/2008

/Alicia Chevalier/  
Primary Examiner, Art Unit 1794